family containing the genera Balanites, Agialida, and *Agiella* (new); the same author (*idem* 261–271) also breaks up the Boraginaceae into 4 families, Boragaceae, Ehretiaceae, Cordiaceae, and Heliotropiaceae.—C. V. PIPER (Contrib. U. S. Nat. Herb. **10**:1–48. *pls. 1–15*. 1906), in a revision of N. Am. species of Festuca, recognizes 34 and describes 3 as new.—A. A. HELLER (Muhlenbergia **2**:177–256. 1906), in an account of botanical exploration in California during 1906, in which numerous species are noted and nomenclatural changes made, describes new species in Taxicoscordion, Eriogonum (2), Mirabilis, Lupinus (4), Hesperastragalus, Anogra, Chylisma, Phlox, Phacelia, Conanthus, Cryptanthe (2), Amsinckia, Pentstemon (2), and Orthocarpus.—PHILIP DOWELL (Bull. Torr. Bot. Club **33**:547–556. *pls. 18–22*. 1906), in a revision of N. Am. species of Calceolaria, recognizes 16 and describes 6 as new.—J. M. C.

Formative influence of light.—PEIRCE has extended his studies on irritability in plants from algae to liverworts and ferns, recording the effect of light upon germination and early growth in *Anthoceros fusiformis*, *A. Pearsoni*, *Fimbriaria californica*, and *Gymnogramme triangularis*, and its effect on form in later stages of growth.[23] He finds that germination is dependent upon light of undetermined intensity, and that direction of growth and of successive cell division is determined by the direction of light. The direction of light also profoundly modifies the form of the thalli of the liverworts. This was most marked in Anthoceros. On a clinostat they tend to become solid, erect, and cylindrical, conic or vasiform, with radial structure instead of dorsiventral. The author holds that his early results support the hypothesis that, aside from what is actually transmitted from parents to offspring, likeness is due to likeness or identity of the physical environment, and that these factors are as essential determinants as the substance transmitted. Unfortunately PEIRCE'S experiments were interrupted by the earthquake of April 16, so that conclusive tests have not been made in all cases. The work will be continued.—C. R. B.

Assimilation of organic acids by algae.—An interesting contribution to our knowledge of the power of assimilation of carbon compounds by autotrophic plants has been made by TRÉBOUX.[24] This investigator experimented with some forty species of the lower algae, testing their power of assimilating various organic acids, which were given in the form of potassium or ammonium salts. Cultures were kept in absolute darkness. It was found that about one-half of the species flourished under the cultural conditions with an organic acid as the only source of carbon; and that of all the acids used acetic acid was most readily assimilated, while acids with larger carbon chains were assimilated in only a few cases. In some cases aminoacids were used with accompanying escape of ammonia. This

[23] PEIRCE, G. J., Studies of irritability in plants. Annals of Botany **20**:449–465. *pl. 35*. 1906.

[24] TRÉBOUX, O., Organische Säuren als Kohlenstoffquelle bei Algen. Ber. Deutsch. Bot. Gesells. **23**:432–441. 1906.